UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/084,879	10/18/2001	Georgios Karagiannis	34648-459USPT	7269

38065 7590 11/09/2005

ERICSSON INC.
6300 LEGACY DRIVE
M/S EVR C11
PLANO, TX 75024

EXAMINER	
WON, MICHAEL YOUNG	
ART UNIT	**PAPER NUMBER**
2155	

DATE MAILED: 11/09/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Supplemental Office Action Summary	Application No.	Applicant(s)	
	10/084,879	KARAGIANNIS ET AL.	
	Examiner	Art Unit	
	Michael Y. Won	2155	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *31 October 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-46* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-46* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. This action is in response to the Amendment filed June 17, 2005 and Amendment After Final filed October 31, 2005.

2. Claims 1, 4-5, 7-8, 10-11, 14-15, 17-18, 20-22, 33, 36, and 44 have been amended in the Amendment filed June 17, 2005.

3. Claims 1-46 have been examined and are pending with this action.

Claim Rejections - 35 USC § 112

4. Rejection to claim 4-5, 7-8, 10-11, 14-15, 17-18, 20-21, 33, and 44 under 35 USC 112, second paragraph, has been withdrawn in view of the amendment filed June 17, 2005.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which

said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 1–46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee (US 6,539,225 B1) in view of Tiedemann, Jr. et al. (US 5,870,427 A) and C. E. Perkins et al. "Route Optimization in Mobile IP", draft-ietf-mobileip-optim-08.txt (Feb. 25, 1999).

INDEPENDENT:

As per ***claims 1 and 36***, Lee teaches a method of handing off a mobile node from an old sub-network router (see Fig.1, #22) to a new sub-network router (see Fig.2, #24) in an Internet Protocol based wireless access network (see col.1, lines 19-22; col.2, lines 51-62; and col.4, lines 14-19), comprising: obtaining a new care-of address for the mobile node from the new sub-network router (see col.4, lines 34-43 and col.5, lines 27-31); sending a request message from the mobile node to a base node via the new sub-network router requesting a new binding (see col.5, lines 29-30), the base node being predetermined one of a home agent (see Fig.2, #26 and col.1, lines 47-55), a gateway foreign agent (see col.1, lines 47-51 and col.4, lines 48-50), and a mobility anchor point (see Fig.2: via home agent; col.1, line 63 to col.2, line 1; and col.4, lines 62-67); creating a new care-of address binding in the base node (see col.4, lines 50-54 and col.5, lines 32-36); and synchronizing a transfer of old care-of address data packets from the base node to the mobile node (see col.5, line 36-47).

Although Lee teaches of a lower layer complying with OSI (Open Systems Interconnection) model (see col.4, lines 46-48); and using information from the lower layer (see col.4, lines 66-67) of the OSI model, Lee does not explicitly

teach of obtaining a handoff starting time; *notifying to the mobile node* that a connection with the old sub-network router will be discarded within a predetermined amount of time; and issuing a reply message from the base node *to the mobile node* via the new sub-network router indicating that the new care-of address binding has been created.

Tiedemann, Jr. teaches of obtaining a handoff starting time (see col.8, lines 43-47). It would have been obvious to a person of ordinary skill in the art at the time the invention was made to employ the teachings of Tiedemann, Jr. within the system of Lee by implementing obtaining a handoff starting time within the Internet Protocol based mobile node handoff system because such implementation allows coordination to occur such that gaps are not created which "interrupt the timely delivery of call content, which can degrade communication quality" as taught by Lee (see col.2, lines 15-19).

Perkins teaches of notifying to the mobile node that a connection with the old sub-network router will be discarded within a predetermined amount of time (see Pg.3, *3.1.Binding Caches*, 4th paragraph: "each binding in the binding cache also has an associated lifetime, specified in the Binding Update message in which the node obtains the binding. After the expiration of this time, the binding is deleted from the cache") and issuing a reply message from the base node to the mobile node via the new sub-network router indicating that the new care-of address binding has been created (see Pg.11, *4.4.Binding Acknowledge Message*, 1st paragraph).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to employ the teachings of Perkins within the system of Lee by implementing notifying to the mobile node that a connection with the old sub-network router will be discarded within a predetermined amount of time and issuing a reply message from the base node to the mobile node via the new sub-network router indicating that the new care-of address binding has been created within the Internet Protocol based mobile node handoff system because Perkins teaches that all messages should be acknowledged "if the acknowledge (A) bit is set" and explains that the only time an acknowledgment is not necessary is when the correspondent node receives a "Binding Update message" from the home agent and when the home agent receives a "Binding Warning message" from the receiving tunneling node (see pg.3-pg.4, *3.1.Binding Caches*, 4th and 5th paragraphs, respectively). Furthermore, such feature gives the sending node reassurance that the message delivered has been properly received and updated.

As per ***claim 22***, Lee teaches of an Internet Protocol based wireless access network (see col.1, lines 19-22; col.2, lines 51-62; and col.4, lines 14-19), comprising: a mobile node adapted to obtain a new care-of address from a new sub-network router (see col.4, lines 34-43 and col.5, lines 27-31) and to issue a request message via the new sub-network router requesting a new binding (see col.5, lines 29-30); and a base node adapted to create the new care-of address binding (see col.4, lines 50-54 and col.5, lines 32-36) upon receiving the request message from the mobile node (see col.5, lines 29-30); wherein the mobile node

and the base node are further adapted to transfer old care-of address data packets from the base node to the mobile node in a synchronized manner (see col.5, line 36-47).

Although Lee teaches of a lower layer complying with OSI (Open Systems Interconnection) model (see col.4, lines 46-48); and using information from the lower layer (see col.4, lines 66-67) of the OSI model, Lee does not explicitly teach of obtaining a handoff starting time; *notifying to the mobile node* that a connection with the old sub-network router will be discarded within a predetermined amount of time; and issuing a reply message from the base node *to the mobile node* via the new sub-network router indicating that the new care-of address binding has been created.

Tiedemann, Jr. teaches of obtaining a handoff starting time (see col.2, lines 63-66). It would have been obvious to a person of ordinary skill in the art at the time the invention was made to employ the teachings of Tiedemann, Jr. within the system of Lee by implementing obtaining a handoff starting time within the Internet Protocol based mobile node handoff system because such implementation allows coordination to occur such that gaps are not created which "interrupt the timely delivery of call content, which can degrade communication quality" as taught by Lee (see col.2, lines 15-19).

Perkins teaches of notifying to the mobile node that a connection with the old sub-network router will be discarded within a predetermined amount of time (see Pg.3, *3.1.Binding Caches*, 4th paragraph: "each binding in the binding cache also has an associated lifetime, specified in the Binding Update message in

which the node obtains the binding. After the expiration of this time, the binding is deleted from the cache"); and issuing a reply message from the base node to the mobile node via the new sub-network router indicating that the new care-of address binding has been created (see Pg.11, *4.4.Binding Acknowledge Message*, 1st paragraph).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to employ the teachings of Perkins within the system of Lee by implementing notifying to the mobile node that a connection with the old sub-network router will be discarded and issuing a reply message from the base node to the mobile node via the new sub-network router indicating that the new care-of address binding has been created within the Internet Protocol based mobile node handoff system because Perkins teaches that all messages should be acknowledged "if the acknowledge (A) bit is set" and explains that the only time an acknowledgment is not necessary is when the correspondent node receives a "Binding Update message" from the home agent and when the home agent receives a "Binding Warning message" from the receiving tunneling node (see pg.3-pg.4, *3.1.Binding Caches*, 4th and 5th paragraphs, respectively). Furthermore, such feature gives the sending node reassurance that the message delivered has been properly received and updated.

DEPENDENT:

As per ***claims 2, 23, and 37***, Lee further teaches wherein the request message is a mobile node registration request message (see col.4, lines 14-19

and col.6, lines 22-29) and the reply message is a mobile node registration reply message (see claim 1 rejection above).

As per ***claims 3, 31, and 42***, Lee further teaches further teaches wherein the base node is a home agent (see Fig.2, #26 and col.1, lines 47-55) and the mobile node is capable of accessing two sub-networks simultaneously (see col.5, lines 36-47 and col.5, line 67 to col.6, line 5), the synchronizing step comprising: deleting an old care-of address binding from the home agent (see col.5, lines 36-40: "prior art systems" and col.6, lines 2-5); and issuing a deregistration reply message from the home agent to the mobile node via the old sub-network router indicating that the old care-of address binding has been deleted (see claim 1 rejection above and col.5, lines 36-41 and col.5, line 67 to col.6, line 5).

As per ***claims 4, 33, and 44,*** Lee does not explicitly teach wherein the mobile node does not receive the deregistration reply message before a predetermined time, the synchronizing step further comprising: sending a binding update message from the mobile node to the old sub-network router; creating a binding cache entry in the old sub-network router linking the old care-of address to the new care-of address; issuing a binding acknowledgment message from the old sub-network router to the mobile node via the new sub-network router; and forwarding old care-of address data packets stored or arriving at the old sub-network router to the new care-of address.

Perkins teaches wherein the mobile node does not receive the deregistration reply message before a predetermined time (see pg.14, *5.1.Previous Foreign Agent Notification Extension*, 2nd paragraph: "Cache

Lifetime"), the synchronizing step further comprising: sending a binding update message from the mobile node to the old sub-network router (see pg.5, *3.2.Foreign Agent Smooth Handoff*, 3rd and 5th paragraphs); creating a binding cache entry in the old sub-network router linking the old care-of address to the new care-of address (see pg.5, *3.2.Foreign Agent Smooth Handoff*, 3rd paragraph); issuing a binding acknowledgment message from the old sub-network router to the mobile node via the new sub-network router (see pg.5, *3.2.Foreign Agent Smooth Handoff*, 5th paragraph); and forwarding old care-of address data packets stored or arriving at the old sub-network router to the new care-of address (see pg4-pg.5, *3.2.Foreign Agent Smooth Handoff*, 2nd and 3rd paragraphs).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to employ the teachings of Perkins within the system of Lee by implementing the steps set forth above within the Internet Protocol based mobile node handoff system because such steps notifies the old foreign agent that the mobile node has moved, deletes stale data, and allows received data directed to mobile node to be redirected to the proper current foreign agent.

As per ***claim 5***, Lee and Perkins further teach wherein the base node is a home agent (see Lee: Fig.2, #26 and col.1, lines 47-55) and the mobile node is capable of accessing only a single sub-network at a time (see Lee: col.5, lines 36-41: "prior art"), the synchronizing step comprising: sending a binding update message from the mobile node to the old sub-network router (see claim 4

rejection above); creating a binding cache entry in the old sub-network router linking the old care-of address to the new care-of address (see claim 4 rejection above); issuing a binding acknowledgment message from the old sub-network router to the mobile node via the new sub-network router (see claim 4 rejection above); forwarding old care-of address data packets stored or arriving at the old sub-network router to the new care-of address (see claim 4 rejection above); deleting an old care-of address binding from the home agent (see claim 3 rejection above); and issuing a deregistration reply message from the home agent to the mobile node via the old sub-network router indicating that the old care-of address binding has been deleted (see claim 3 rejection above).

As per ***claims 6, 34, 35, 45 and 46***, Lee further teaches wherein a route optimization function is used (see abstract), the base node is a home agent (see Fig.2, #26 and col.1, lines 47-55), and the mobile node is capable of accessing two sub-networks simultaneously (see col.5, lines 36-47 and col.5, line 67 to col.6, line 5).

Lee does not explicitly teach wherein the synchronizing step comprising: sending a deregistration binding update message from the mobile node to a correspondent node via the old sub-network router; deleting an old care-of address binding from the correspondent node; issuing a deregistration binding acknowledgment message from the correspondent node to the mobile node via the old sub-network router; sending a binding update message from the home agent to the correspondent node; and creating a new care-of address binding in the correspondent node.

Perkins teaches of steps comprising: sending a deregistration binding update message from the mobile node to a correspondent node via the old sub-network router (pg.3, *3.1.Binding Caches*, 2nd paragraph); deleting an old care-of address binding from the correspondent node (inherent); issuing a deregistration binding acknowledgment message from the correspondent node to the mobile node via the old sub-network router (see claim 1 rejection above); sending a binding update message from the home agent to the correspondent node (see pg.3, *3.1.Binding Caches*, 4th paragraph); and creating a new care-of address binding in the correspondent node (pg.3, *3.1.Binding Caches*, 3rd paragraph).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to employ the teachings of Perkins within the system of Lee by implementing the steps set forth with a corresponding node to bypass the home node within the method of handing off a mobile node from an old sub-network router to a new sub-network router in an Internet Protocol based wireless access network because "triangular routing" "delays the delivery of the datagrams to mobile nodes, places an unnecessary burden on the networks and routers along their paths through the Internet" (see pg.1, *1.Introduction*, 2nd paragraph)

As per ***claim 7***, Lee and Perkins further teaches wherein the mobile node does not receive the deregistration binding acknowledgement message before the old wireless sub-network has deteriorated beyond a certain point (see claim 1 rejection above), the synchronizing step further comprising: sending a binding update message from the mobile node to the old sub-network router (see claim 4

rejection above); creating a binding cache entry in the old sub-network router linking the old care-of address to the new care-of address (see claim 4 rejection above); issuing a binding acknowledgment message from the old sub-network router to the mobile node via the new sub-network router (see claim 4 rejection above); and forwarding old care-of address data packets stored or arriving at the old sub-network router to the new care-of address (see claim 4 rejection above).

As per ***claim 8***, Lee and Perkins further teaches wherein a route optimization function is used (see Lee: abstract), the base node is a home agent (see Lee: Fig.2, #26 and col.1, lines 47-55), and the mobile node is capable of accessing only a single sub-network at a time (see Lee: col.5, lines 36-41: "prior art"), the synchronizing step comprising: sending a binding update message from the mobile node to the old sub-network router (see claim 4 rejection above); creating a binding cache entry in the old sub-network router linking the old care-of address to the new care-of address (see claim 4 rejection above); issuing a binding acknowledgment message from tile old sub-network router to the mobile node via the new sub-network router (see claim 4 rejection above); forwarding old care-of address data packets stored or arriving at the old sub-network router to the new care-of address (see claim 4 rejection above); sending a binding update message from the home agent to a correspondent node (see claim 6 rejection above); and creating a new care-of address binding in the correspondent node (see claim 6 rejection above).

As per ***claim 9***, Lee further teach wherein the base node is a gateway foreign agent (see col.1, lines 47-51 and col.4, lines 48-50) and the mobile node

is capable of accessing two sub-networks simultaneously (see col.5, lines 36-47 and col.5, line 67 to col.6, line 5), the synchronizing step comprising: deleting an old care-of address binding from the gateway foreign agent (see claim 3 rejection above); and issuing a deregistration reply message from the gateway foreign agent to the mobile node via the old sub-network router indicating that the old care-of address binding has been deleted (see claim 3 rejection above).

As per ***claim 10***, Lee and Perkins further teaches wherein the mobile node does not receive the deregistration binding acknowledgment message before a predetermined time (see claim 1 rejection above), the synchronizing step further comprising: sending a binding update message from the mobile node to the old sub-network router (see claim 4 rejection above); creating a binding cache entry in the old sub-network router linking the old care-of address to the new care-of address (see claim 4 rejection above); issuing a binding acknowledgment message from the old sub-network router to the mobile node via the new sub-network router (see claim 4 rejection above); and forwarding old care-of address data packets stored or arriving at the old sub-network router to the new care-of address (see claim 4 rejection above).

As per ***claim 11***, Lee and Perkins further teaches wherein the base node is a gateway foreign agent (see Lee: col.1, lines 47-51 and col.4, lines 48-50), and the mobile node is capable of accessing only a single sub-network at a time (see Lee: col.5, lines 36-41: "prior art"), the synchronizing step comprising: sending a binding update message from the mobile node to the old sub-network router (see claim 4 rejection above); creating a binding cache entry in the old

sub-network router linking the old care-of address to the new care-of address (see claim 4 rejection above); issuing a binding acknowledgment message from the old sub-network router to the mobile node via the new sub-network router (see claim 4 rejection above); forwarding old care-of address data packets stored or arriving at the old sub-network router to the new care-of address (see claim 4 rejection above); deleting an old care-of address binding from the gateway foreign agent (see claim 3 rejection above); and issuing a deregistration reply message from the gateway foreign agent to the mobile node via the old sub-network router indicating that the old care-of address binding has been deleted (see claim 3 rejection above).

As per ***claims 12, 24, and 38***, Lee and Perkins further teach wherein the request message is a binding update message (see Lee: col.4, lines 41-43 & 50-54; and col.5, lines 26-36) and the reply message is a binding acknowledgment message (see claim 1 rejection above).

As per ***claims 13 and 43***, Lee further teach wherein the base node is a home agent (see Fig.2, #26 and col.1, lines 47-55) and the mobile node is capable of accessing two sub-networks simultaneously (see col.5, lines 36-47 and col.5, line 67 to col.6, line 5), the synchronizing step comprising issuing: sending a deregistration binding update message from the mobile node to the home agent via the old sub-network router (see col.6, lines 22-29); deleting an old care-of address binding from the home agent (see claim 3 rejection above); and sending a deregistration reply or deregistration binding acknowledgment message from the home agent to the mobile node via the old sub-network router

indicating that the old care-of address binding has been deleted (see claim 3 rejection above).

As per ***claim 14***, Lee and Perkins further teaches wherein the mobile node does not receive the deregistration reply message before the old wireless sub-network has badly deteriorated beyond a certain point (see claim 1 rejection above), the synchronizing step further comprising: sending a binding update message from the mobile node to the old sub-network router (see claim 4 rejection above); creating a binding cache entry in the old sub-network router linking the old care-of address to the new care-of address (see claim 4 rejection above); issuing a binding acknowledgement message from the old sub-network router to the mobile node via the new sub-network router (see claim 4 rejection above); and forwarding old care-of address data packets stored or arriving at the old sub-network router to the new cart-of address (see claim 4 rejection above).

As per ***claim 15***, Lee and Perkins further teaches wherein the base node is a home agent (see Lee: Fig.2, #26 and col.1, lines 47-55) and the mobile node is capable of accessing only a single sub-network at a time (see Lee: col.5, lines 36-41: "prior art"), the synchronizing step comprising: sending a binding update message from the mobile node to the old sub-network router (see claim 4 rejection above); creating a binding cache entry in the old sub-network router linking the old care-of address to the new care-of address (see claim 4 rejection above); issuing a binding acknowledgement message from the old sub-network router to the mobile node via the new sub-network router (see claim 4 rejection above); forwarding old care-of address data packets stored or arriving at the old

sub-network router to the new care-of address (see claim 4 rejection above); sending a deregistration binding update message from the mobile node to the home agent via the old sub-network router (see claim 13 rejection above); deleting an old care-of address binding from the gateway foreign agent (see claim 3 rejection above); and issuing a deregistration reply message from the gateway foreign agent to the mobile node via the old sub-network router indicating that the old care-of address binding has been deleted (see claim 3 rejection above).

As per ***claim 16***, Lee and Perkins further teaches wherein a route optimization function is used (see Lee: abstract), the base node is a home agent (see Lee: Fig.2, #26 and col.1, lines 47-55), and the mobile node is capable of accessing two sub-networks simultaneously (see Lee: col.5, lines 36-47 and col.5, line 67 to col.6, line 5), the synchronizing step comprising: sending a deregistration binding update message from the mobile node to a correspondent node via the old sub-network router (see claim 6 rejection above); deleting an old care-of address binding in the correspondent node (see claim 6 rejection above); issuing a deregistration binding acknowledgment message from correspondent node to the mobile node via the old sub-network router (see claim 6 rejection above); sending a binding update message from the mobile node to the correspondent node via the new sub-network router (see pg.2, *2.Teminology*, "Binding update"); creating a new care-of address binding in the correspondent node (see claim 6 rejection above); and issuing a binding acknowledgment

message from the correspondent node to the mobile node via the new sub-network router (see pg.11, *4.4.Binding Acknowledge Message*, 1st paragraph).

As per ***claim 17***, Lee and Perkins further teaches wherein the mobile node does not receive the deregistration binding acknowledgment message before the old wireless sub-network has deteriorated beyond a certain point (see claim 7 rejection above), the synchronizing step further comprising: sending a binding update message from the mobile node to the old sub-network router (see claim 4 rejection above); creating a binding cache entry in the old sub-network router linking the old care-of address to the new care-of address (see claim 4 rejection above); issuing a binding acknowledgment message from the old sub-network router to the mobile node via the new sub-network router (see claim 4 rejection above); and forwarding old care-of address data packets stored or arriving at the old sub-network router to the new care-of address (see claim 4 rejection above).

As per ***claim 18***, Lee and Perkins further teaches wherein a route optimization function is used, the base node is a home agent (see Lee: Fig.2, #26 and col.1, lines 47-55), and the mobile node is capable of accessing only a single sub-network at a time (see Lee: col.5, lines 36-41: "prior art"), the synchronizing step comprising: sending a binding update message from the mobile node to the old sub-network router (see claim 4 rejection above); creating a binding cache entry in the old sub-network router linking the old care-of address to the new care-of address (see claim 4 rejection above); issuing a binding acknowledgment message from the old sub-network router to the mobile

node via the new sub-network router (see claim 4 rejection above); forwarding old care-of address data packets stored or arriving at the old sub-network router to the new care-of address (see claim 4 rejection above); sending a binding update message from the mobile node to the correspondent node via the new sub-network router (see claim 16 rejection above); creating a new care-of address binding in the correspondent node (see claim 6 rejection above); and issuing a binding acknowledgment message from the correspondent node to the mobile node via the new sub-network router (see claim 16 rejection above).

As per ***claim 19***, Lee further teach wherein the base node is a mobility anchor point (see Fig.2: via home agent; col.1, line 63 to col.2, line 1; and col.4, lines 62-67) and the mobile node is capable of accessing two sub-networks simultaneously (see col.5, lines 36-47 and col.5, line 67 to col.6, line 5), the synchronizing step comprising: sending a deregistration binding update message from the mobile node to the mobility anchor point via the old sub-network router (see claim 13 rejection above); deleting an old care-of address binding from the mobility anchor point (see claim 3 rejection above); and issuing a deregistration binding acknowledgment message from the mobility anchor point to the mobile node via the old sub-network router (see claim 3 rejection above).

As per ***claim 20***, Lee and Perkins further teach wherein the mobile node does not receive the deregistration binding acknowledgment before the old wireless sub-network has deteriorated beyond a certain point (see claim 7 rejection above), the synchronizing step further comprising: sending a binding update message from the mobile node to the old sub-network router (see claim 4

rejection above); creating a binding cache entry in the old sub-network router linking the old care-of address to the new care-of address (see claim 4 rejection above); issuing a binding acknowledgment message from the old sub-network router to the mobile node via the new sub-network router (see claim 4 rejection above); and forwarding old care-of address data packets stored or arriving at the old sub-network router to the new care-of address (see claim 4 rejection above).

As per ***claim 21***, Lee and Perkins further teach wherein the base node is a gateway foreign agent (see Lee: col.1, lines 47-51 and col.4, lines 48-50), and the mobile node is capable of accessing only a single sub-network at a time (see Lee: col.5, lines 36-41: "prior art"), the synchronizing step comprising: sending a binding update message from the mobile node to the old sub-network router (see claim 4 rejection above); creating a binding cache entry in the old sub-network router linking the old care-of address to the new care-of address (see claim 4 rejection above); issuing a binding acknowledgment message from the old sub-network router to the mobile node via the new sub-network router (see claim 4 rejection above); forwarding old care-of address data packets stored or arriving at the old sub-network router to the new care-of address (see claim 4 rejection above); sending a deregistration binding update message from the mobile node to the mobility anchor point via the old sub-network router (see claim 13 rejection above); deleting an old care-of address binding from the mobility anchor point (see claim 3 rejection above); and issuing a deregistration binding acknowledgment message from the mobility anchor point to the mobile node via the old sub-network router (see claim 3 rejection above).

As per ***claims 25 and 39***, Lee further teaches wherein a route optimization function is used (see abstract).

As per ***claims 26 and 40***, Lee further teaches wherein the mobile node is capable of accessing two sub-networks simultaneously (see col.5, lines 36-47 and col.5, line 67 to col.6, line 5).

As per ***claims 27 and 41***, Lee further teaches wherein the mobile node is capable of accessing only a single sub-network at a time (see col.5, lines 36-41: "prior art").

As per ***claim 28***, Lee further teaches wherein the base node is a home agent (see Fig.2, #26 and col.1, lines 47-55).

As per ***claim 29***, Lee further teaches wherein the base node is a gateway foreign agent (see col.1, lines 47-51 and col.4, lines 48-50).

As per ***claim 30***, Lee further teaches wherein the base node is a mobility anchor point (see Fig.2: via home agent; col.1, line 63 to col.2, line 1; and col.4, lines 62-67).

As per ***claim 32***, Lee and Perkins further teach wherein the mobile node is further adapted to send a deregistration binding update message to the base node via the old sub-network router, and the base node is further adapted to delete an old care-of address binding therefrom, and issue a deregistration binding acknowledgment message to the mobile node via the old sub-network router indicating that the old care-of address binding has been deleted (see claim 3 and claim 6 rejections above).

Response to Arguments

6. With respect to the arguments presented in the Amendment After Final filed October 31, 2005 regarding claims 1, 22, and 36, a new secondary reference has been provided Tiedemann, Jr. et al. (US 5,870,427 A) to better teach the limitation regarding "obtaining a handoff starting time".

In response to the argument regarding notifying the mobile node that a connection with the old sub-network router will be discarded within a predetermined amount of time, a new reference location has been provided with respect to the Perkins reference to teach this limitation.

Therefore, applicant's arguments of the Amendment filed June 17, 2005 with respect to claims 1, 22, and 36 remain moot in view of the new ground(s) of rejection. Although Lee (US 6,539,225) does not explicitly teach of "obtaining a handoff starting time", the newly cited reference, Tiedemann, Jr. et al. (US 5,870,427 A), clearly teaches this limitations.

For the reasons above claims 1-46 remain rejected.

Conclusion

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL.** See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Y. Won whose telephone number is 571-272-3993. The examiner can normally be reached on M-Th: 7AM-5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Saleh Najjar can be reached on 571-272-4006. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Michael Won

November 3, 2005

SALEH NAJJAR
SUPERVISORY PATENT EXAMINER